

CLAIMS:

1. A heat exchanger tube comprising: a tube body portion constituting an outer shell of flow passages for flowing a medium, and corrugated inner fins for dividing the flow passages, the tops of the inner fins are flat tubes brazed to the inner surface of the tube body portion and in which the medium performs heat exchange with heat conducted to the tube, wherein:

a brazing material which is required for brazing the tops of the inner fins and the inner surface of the tube body portion is not clad to a first material constituting the tube body portion but clad to a second material constituting the inner fins.

2. The heat exchanger tube according to claim 1, wherein a thickness of a clad layer of the brazing material in the second material is 5 to 10% in ratio with respect to the thickness of the second material.

3. The heat exchanger tube according to claim 1 or 2, wherein the second material has a thickness of 0.1 mm or less.

4. The heat exchanger tube according to claim 3, wherein the second material has a thickness of 0.05 to 0.07 mm.

5. The heat exchanger tube according to any one of claims 1 through 4, wherein the first material has a thickness of 0.25 mm or less.

6. The heat exchanger tube according to claim 5, wherein the

first material has a thickness of 0.18 to 0.24 mm.

7. The heat exchanger tube according to any one of claims 1 through 6, wherein the tube has a thickness of 1.2 mm or less.

8. The heat exchanger tube according to claim 7, wherein the tube has a thickness of 0.8 to 1.2 mm.

9. The heat exchanger tube according to any one of claims 1 through 8, wherein the tube has a width of 16 mm or less.

10. The heat exchanger tube according to claim 9, wherein the tube has a width of 12 to 16 mm.

11. The heat exchanger tube according to any one of claims 1 through 10, wherein the flow passages divided by the inner fins have an equivalent diameter of 0.559 mm or less.

12. The heat exchanger tube according to claim 11, wherein the flow passages divided by the inner fins have an equivalent diameter of 0.254 mm to 0.559 mm.

13. The heat exchanger tube according to any one of claims 1 through 12, wherein the tops of the inner fins have a pitch of 1.0 mm or less.

14. The heat exchanger tube according to any one of claims 1 through 13, wherein an Al-Zn alloy layer is formed on the surface

of the first material which becomes an outer shell of the tube.

15. The heat exchanger tube according to any one of claims 1 through 14, wherein the tops of the inner fins are flat.

16. The heat exchanger tube according to any one of claims 1 through 15, wherein ends of the second material in its breadth direction are brazed with the first material by the brazing material which is clad to the second material.

17. The heat exchanger tube according to claim 16, wherein both ends of the first material in its breadth direction are engaged and brazed with an end of the second material in its breadth direction sandwiched at one end of the tube in its breadth direction so as not to separate from each other.

18. The heat exchanger tube according to any one of claims 1 through 17, wherein the portion between the tops of the inner fins is not perpendicular with respect to the central axis of the tube in its breadth direction.

19. The heat exchanger tube according to any one of claims 1 through 18, wherein:

the tube is a constituting member of the heat exchanger, and the heat exchanger is produced by assembling the tube and other constituting members into one body and brazing the assembled body in a furnace, and

the brazing material clad to the second material melts when

brazed in the furnace earlier than the brazing material which melts from the other constituting members and penetrates into the flow passages to prevent the flow passages from being clogged.

20. The heat exchanger tube according to claim 19, wherein the brazing material clad to the second material has a melting point lower than that of the brazing material which melts from the other constituting members and penetrates into the flow passages.

21. The heat exchanger tube according to claim 19, wherein the brazing material clad to the second material melts earlier than the brazing material which melts from the other constituting members and penetrates into the flow passages because the tube has a thermal resistance lower than that of the other constituting members.

22. The heat exchanger tube according to any one of claims 19 through 21, wherein among plural flow passages divided by the inner fins, an equivalent diameter of the flow passage, which is positioned at the lowest position when brazing in the furnace, or individual equivalent diameters of the flow passages positioned at the lowest position and flow passages positioned nearby when brazing in the furnace are larger than a whole average of the equivalent diameters of the plural flow passages divided by the inner fins.

23. A heat exchanger tube comprising: a tube body portion constituting an outer shell of flow passages for flowing a

medium, and corrugated inner fins for dividing the flow passages, the tops of the inner fins are flat tube brazed to the inner surface of the tube body portion and in which the medium performs heat exchange with heat conducted to the tube, wherein:

the tube has a thickness of 1.2 mm or less,

the tube has a width of 16 mm or less,

the first material constituting the tube body portion has a thickness of 0.25 mm or less,

the second material constituting the inner fins has a thickness of 0.10 mm or less, and

the flow passages divided by the inner fins have an equivalent diameter of 0.559 mm or less.

24. The heat exchanger tube according to claim 23, wherein the second material has a thickness of 0.05 to 0.07 mm.

25. The heat exchanger tube according to claim 23 or 24, wherein the first material has a thickness of 0.18 to 0.24 mm.

26. The heat exchanger tube according to any one of claims 23 through 25, wherein the tube has a thickness of 0.8 to 1.2 mm.

27. The heat exchanger tube according to any one of claims 23 through 26, wherein the tube has a width of 12 to 16 mm.

28. The heat exchanger tube according to any one of claims 23 through 27, wherein the flow passages divided by the inner fins have an equivalent diameter of 0.254 mm to 0.559 mm.

29. The heat exchanger tube according to any one of claims 23 through 28, wherein the tops of the inner fins have a pitch of 1.0 mm or less.

30. The heat exchanger tube according to any one of claims 23 through 29, wherein an Al-Zn alloy layer is formed on the surface of the first material which becomes an outer shell of the tube.

31. The heat exchanger tube according to any one of claims 23 through 30, wherein the tops of the inner fins are flat.

32. The heat exchanger tube according to any one of claims 23 through 31, wherein ends of the second material in its breadth direction are brazed to the first material.

33. The heat exchanger tube according to claim 32, wherein both ends of the first material in its breadth direction are engaged and brazed with an end of the second material in its breadth direction sandwiched at one end of the tube in its breadth direction so as not to separate from each other.

34. The heat exchanger tube according to any of claims 23 through 33, wherein the portion between the tops of the inner fins is not perpendicular with respect to the central axis of the tube in its breadth direction.

35. The heat exchanger tube according to any one of claims 23

through 34, wherein:

the tube is a constituting member of the heat exchanger, and the heat exchanger is produced by assembling the tube and other constituting members into one body and brazing the assembled body in a furnace,

the brazing material which is required for brazing the tops of the inner fins and the inner surface of the tube body portion is disposed within the flow passages, and

the brazing material disposed within the flow passages melts when brazed in the furnace earlier than the brazing material which melts from the other constituting members and penetrates into the flow passages to prevent the flow passages from being clogged.

36. The heat exchanger tube according to claim 35, wherein the brazing material disposed within the flow passages has a melting point lower than that of the brazing material which melts from the other constituting members and penetrates into the flow passages.

37. The heat exchanger tube according to claim 35, wherein the brazing material disposed within the flow passages melts earlier than the brazing material which melts from the other constituting members and penetrates into the flow passages because the tube has a thermal resistance which is lower than that of the other constituting members.

38. The heat exchanger tube according to any one of claims 35

through 37, wherein among plural flow passages divided by the inner fins, an equivalent diameter of the flow passage, which is positioned at the lowest position when brazing in the furnace, or individual equivalent diameters of the flow passages positioned at the lowest position and flow passages positioned nearby when brazing in the furnace are larger than a whole average of the equivalent diameters of the plural flow passages divided by the inner fins.

39. A heat exchanger tube comprising: a tube body portion constituting an outer shell of flow passages for flowing a medium, and a flow passage dividing body for dividing the flow passages, the flow passage dividing body being a tube brazed to the inner surface of the tube body portion, and the medium performing heat exchange with heat conducted to the tube, wherein:

the tube is a constituting member of a heat exchanger, and the heat exchanger is produced by assembling the tube and other constituting members into one body and brazing the assembled body in a furnace,

a brazing material which is required for brazing the flow passage dividing body and the inner surface of the tube body portion is disposed within the flow passages, and

the brazing material disposed within the flow passages melts when brazed in the furnace earlier than the brazing material which melts from the other constituting members and penetrates into the flow passages to prevent the flow passages from being clogged.



40. The heat exchanger tube according to claim 39, wherein the flow passage dividing body is corrugated inner fins, and the tops of the inner fins are brazed to the inner surface of the tube body portion.

41. The heat exchanger tube according to claim 39, wherein the flow passage dividing body is beads obtained by shaping a material constituting the tube body portion, and the tops of the beads are brazed to the inner surface of the tube body portion.

42. The heat exchanger tube according to any one of claims 39 through 41, wherein the brazing material disposed within the flow passages has a melting point lower than that of the brazing material which melts from the other constituting members and penetrates into the flow passages.

43. The heat exchanger tube according to any one of claims 39 through 41, wherein the brazing material disposed within the flow passages melts earlier than the brazing material which melts from the other constituting members and penetrates into the flow passages because the tube has a thermal resistance which is lower than that of the other component members.

44. The heat exchanger tube according to any one of claims 39 through 43, wherein the flow passages divided by the flow passage dividing body have an equivalent diameter of 0.559 mm or less.

45. The heat exchanger tube according to claim 44, wherein the

flow passages divided by the flow passage dividing body have an equivalent diameter of 0.254 mm to 0.559 mm.

46. The heat exchanger tube according to any one of claims 39 through 45, wherein among plural flow passages divided by the flow passage dividing body, an equivalent diameter of the flow passages, which are positioned at the lowest position when brazing in the furnace, or individual equivalent diameters of the flow passages positioned at the lowest position and flow passages positioned nearby when brazing in the furnace are larger than a whole average of the equivalent diameters of the plural flow passages divided by the inner fins.